No. 9100200

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

The Board of Regents
University of Nebraska and USDA–ARS

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, (THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM,) TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS REQUIRED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

(*Waived, except that this waiver shall not apply to breeder seed, foundation seed, labeling requirements, and blending limitations.)

WHEAT

'Rawhide'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 29th day of April in the year of our Lord one thousand nine hundred and ninety-four.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Mike Espy
Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Board of Regents, University of Nebraska and USDA/ARS

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
NE 83498

3. VARIETY NAME
Rawhide

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
Lincoln, Nebraska 68583-0915

Washington, D.C. 20250

5. PHONE *(Include area code)*
402-472-7211

202-447-3656

FOR OFFICIAL USE ONLY

PVPO NUMBER
9100200

FILING
Date: June 13, 1991
Time: ☐ A.M. ☐ P.M.

FEES
Filing and Examination Fee: $ 2150.—
Date: June 13, 1991

RECEIVED
Certificate Fee: $ 250.00
Date: April 4, 1994

6. GENUS AND SPECIES NAME
Triticum aestivum L

7. FAMILY NAME *(Botanical)*
Graminae

8. CROP KIND NAME *(Common Name)*
Hard Red Winter Wheat

9. DATE OF DETERMINATION
~~a)~~ July, 1983 2a → April 1994 per phone call to KHC
~~b) December, 1990~~

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation and U.S. Government Agency

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Nebraska and District of Columbia

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS

Dr. D. W. Nelson, Dean and Director
Agricultural Research Div., IANR-UNL
Lincoln, Nebraska 68583-0704
Telephone: 402-472-2045

Dr. R. D. Plowman
USDA/ARS, Administration Bldg., Room 302A
Washington, D.C. 20250

PHONE *(Include area code)*:

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. ☒ Exhibit A, Origin and Breeding History of the Variety.
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☒ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____.
g. ☒ Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
☒ YES *(If "YES," answer items 16 and 17 below)* ☐ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____.)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☒ YES (If "YES," give names of countries and dates) United States, September, 1990
☐ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
Daniel W Nelson	Director, Nebraska Agricultural Experiment Station	4/12/91
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
R D Plowman	Administrator, ARS	APR 29 1991

'Rawhide' (P. I. 518591) Hard Red Winter Wheat Application

Exhibit A. Origin and Breeding History:

Rawhide is a selection from the cross 'Warrior'*5/'Agent' //'Kavkaz' /4/'Parker'*4/Agent //'Beloterkovskaia 198' /'Lancer'/3/'Vona' made in 1977 by Dr. J. W. Schmidt. The F_1 generation was grown in the greenhouse in 1978. The F_2 and F_3 generations were grown in bulk at Mead, Nebraska in 1979 and 1980, respectively. Random heads were chosen from the F_3 and planted as head rows which were harvested in 1981. The F_3-derived F_5 family was selected and harvested as a single observation plot in 1982. In 1983, Rawhide was grown at five locations in unreplicated trials in Nebraska. Rawhide was identified in these trials as NE83498. It has been tested in replicated trials from 1984 to the present. In addition, it has been tested in the Southern Regional Performance Nursery in 1989 and 1990. Rawhide was named and released on December 14, 1990 by the Nebraska Agricultural Experiment Station, South Dakota Experiment Station, and the Agricultural Research Service, U. S. Department of Agriculture. The initial allocation of Foundation seed to certified growers was made in September, 1990.

Rawhide will be maintained by the Nebraska Agriculture Experiment Station with the following classes: Breeder, Foundation, Registered, and Certified. Breeder seed of Rawhide will be maintained by roguing Breeder seed fields. The U. S. Department of Agriculture will not have seed for distribution.

Rawhide appears stable and uniform during seed increase. Less than 0.1% of the plants were rogued from Foundation and Breeder seed fields. It is expected that less than 0.1% (1:1000) variant plants (taller, 3 to 7 cm taller) may be encountered in subsequent generations.

Exhibit B. Novelty Statement

Rawhide is most similar to the hard red winter wheat cultivar Redland, but it can be distinguished by the following characteristics.

1. Rawhide is slightly shorter (25 mm) than Redland.

2. Rawhide is two days earlier than Redland.

3. Rawhide has about 1.8 lbs/bu heavier test weight.

4. In data provided by Dr. Don McVey of the USDA Cereal Rust Laboratories, Rawhide contains Sr17 and Sr24, is heterogeneous for Sr31, whereas Redland contains genes Sr5, Sr17, and Sr24.

5. Rawhide has hairs on the lower leaf auricles whereas Redland does not have hairy auricles.

6. Rawhide has a shorter (6.98 $\pm$ 0.08 cm) and wider (11.1 $\pm$ 0.2 mm) spike than Redland (7.96 $\pm$ 0.14 cm and 9.7 $\pm$ 0.1 mm)

9100200

University of Nebraska Lincoln
Institute of Agriculture and Natural Resources

Department of Agronomy
Crop, Range, Soil & Water, Weed Sciences
279 Plant Science • P.O. Box 830915
Lincoln, NE 68583-0915
PH. (402) 472-2811 • FAX (402) 472-7904
BITNET: AGRO001 @ UNLVM

October 25, 1993

Dr. A. A. Atchley
Plant Variety Protection Office
NAL Building, Room 500
10301 Baltimore Blvd.
Beltsville, MD 20705-2351

Dear Alan:

I am responding to your letter of October 8, 1993 to Dr. D. W. Nelson concerning additional information needed on 'Rawhide' hard red winter wheat. Rawhide can be most clearly differentiated from '7833' (developed by HybriTech Seed International, Inc., but sold to AGSECO) by Rawhide being susceptible to wheat soilborne mosaic virus (WSBMV) and 7833 being resistant to WSBMV. In the Kansas State University 1992 summary of disease and insect reactions (enclosed), 7833 was scored as a 1 for resistance to WSBMV whereas Rawhide was scored as and 8. The scale is 1 for resistance and 9 for complete susceptibility. Resistance to WSBMV is important in eastern Kansas and Southeastern Nebraska, hence this is an important differentiating trait. Again using a 1 (resistant) to 9 (susceptible) scale, Rawhide is moderately resistant (4) to powdery mildew while 7833 is moderately susceptible (6). Similarly, Rawhide is moderately susceptible (6) to Hessian fly whereas 7833 is susceptible (8) to Hessian fly. I hope these traits will be sufficient to differentiate between Rawhide and 7833.

You also requested the number of generations over which Rawhide has been observed for stability and uniformity. Rawhide is stable and uniform over six generations of selfing and during the seed increase program. Finally you requested the characteristics which were bred for in this variety. I believe this is equivalent to asking for the criteria of selection. Our criteria for selection for each released hard red winter wheat cultivar are: a) adequate winterhardiness for propagation in Nebraska, b) resistance to Puccinia graminis (the causal organism of stem rust), c) agronomic performance equal or superior to commonly grown varieties, and d) acceptable end-use quality (in this case for bread making). These are the traits for which Rawhide was bred.

Exh. A addendum 16 Feb 1994

I hope this information will be satisfactory to conclude the PVP Application for Rawhide.

P. Stephen Baenziger
Eugene W. Price Professor and Head

cc R. Hammons
D. Thompson
D. Nelson

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7. Rawhide has a longer beak (7.63 ± 0.33 mm) than Redland (1.49 ± 0.07mm).

Exhibit C. See attached sheet.

Exhibit D.

Additional Description of the Variety:

Rawhide is an awned, white glumed cultivar. The foliage is blue-green with a waxy bloom at anthesis. The spike is middense and mostly strap. At maturity, the spike is inclined to nodding. The glume is midlong and midwide. The glume shoulder is narrow and oblique to square. The beak is acuminate and long with a range of medium to very long. The kernel is short, red colored, hard textured, and elliptical to ovate. The kernel has no collar, rounded cheeks, midsize germ, large brush, and a narrow and shallow crease.

Rawhide has been tested in Nebraska yield nurseries since 1984, in the Southern Regional Performance Nursery in 1988 and 1989 and in the Northern Regional Performance Nursery in 1989. In five years (23 location-years) of testing in the Nebraska Intrastate Nursery, Rawhide's yield (3420 kg/h) was similar to 'Siouxland' (3430 kg/h), less than 'Arapahoe' (3490 kg/h), and superior to 'Redland' (3300 kg/h). Yield, test weight, height, and anthesis date will vary with the environment.

It is moderately resistant to the currently prevalent races of stem rust (incited by Puccinia graminis Pers. f. sp. tritici Eriks. and E. Henn.; contains Sr17, Sr24, and/or Sr31). It expresses the heterogeneous reaction to the Great Plains biotype of Hessian fly (Mayetiola destructor Say) which is believed to indicate the Marquillo-Kawvale genes for resistance. It is susceptible to leaf rust (incited by P. recondita Rob. ex. Desm. f. sp. tritici Eriks.), wheat soilborne mosaic virus, and wheat streak mosaic virus.

The overall bread making properties of Rawhide are average. Using composite samples from field trials in Nebraska, Rawhide is similar to Arapahoe and Scout 66 in wheat and flour protein content and higher than Centurk 78. Rawhide is also similar to Arapahoe, less than Scout 66, and greater than Centurk 78 for milling extraction. Baking absorption was similar for Rawhide, Arapahoe, Centurk 78, and Scout 66. Rawhide has strong mixing characteristics as determined by the mixograph. The loaf volume of Rawhide was less than Arapahoe and Scout 66, and was similar to Centurk 78. Internal and external loaf characteristics were acceptable (see attachement). The kernels of Rawhide have been classified, using the existing standards, by the Federal Grain Inspection Service as being hard red winter wheat.

Exhibit E.

Statement of the Basis of the Applicant's Ownership

The University of Nebraska and the USDA/ARS are the applicants for protection in the case of Rawhide hard red winter wheat being:

a) Rawhide is a product of the cooperative state-federal breeding program location in the Agricultural Research Division (ARD), University of Nebraska. Drs. P. Stephen Baenziger, John W. Schmidt, and Paul J. Mattern;

and Drs. C. James Peterson and Virgil A. Johnson, regular employees of the Nebraska ARD (Department of Agronomy) and the USDA/ARS (stationed and functioning also as staff members in the Department of Agronomy), respectively, have bred the named cultivar for and within these incorporated institutions.

b) By established policy, release of cultivars developed by the Nebraska ARD is the responsibility of the Nebraska ARD as the agency providing staff, funds, and facilities for the breeding program.

FORM APPROVED: OMB NO. 0581-0055

EXHIBIT C
(Wheat)

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN AND SEED DIVISION
BELTSVILLE, MARYLAND 20785

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Board of Regents, University of Nebraska and
USDA Agricultural Research Service

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Lincoln, NE 68583-0745

Washington, DC 20750

FOR OFFICIAL USE ONLY

PVPO NUMBER 9100200

VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____ [2] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO: NA

[ ][ ][ ] FIRST FLOWERING [ ][ ][ ] LAST FLOWERING

4. MATURITY (*50% Flowering*):

[0][2] NO. OF DAYS *EARLIER* THAN ..... [7] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[ ][ ] NO. OF DAYS *LATER* THAN ..... [ ] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

7= Redland

5. PLANT HEIGHT (*From soil level to top of head*):

[0][8][4] CM. HIGH

[ ][ ] CM. TALLER THAN ..... [ ] 7= Redland

[2.][5] CM. SHORTER THAN ..... [7] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):

[3] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][4] NO. OF NODES (*Originating from node above ground*)

[3][4] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][0] MM. LEAF WIDTH (*First leaf below flag leaf*)

[1][7] CM. LEAF LENGTH (*First leaf below flag leaf*):

FORM LMGS 470-6 (6-82) (Formerly Form LPGS 470-6 (3-79), which may be used)

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9100200

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3= Middense

[2] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER *(Specify)* _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER *(Specify)*: _____

[7.0] CM. LENGTH [11] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT *(CA. 7 mm.)* 2 = MEDIUM *(CA. 8 mm.)* 3 = LONG *(CA. 9 mm.)*

[2] Width: 1 = NARROW *(CA. 3 mm.)* 2 = MEDIUM *(CA. 3.5 mm.)* 3 = WIDE *(CA. 4 mm.)*

[3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[1] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[3] Shape: with a tendency to ovate 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[5] Phenol reaction *(See instructions)*: 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER *(Specify)* _____

[5.8] MM. LENGTH [2.9] MM. WIDTH [28] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[2] STEM RUST *(Races)* TMNK [1] LEAF RUST *(Races)* _____ [0] STRIPE RUST *(Races)* _____ [0] LOOSE SMUT

[0] POWDERY MILDEW [0] BUNT [ ] OTHER *(Specify)* _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3= Moderately Resistant

[0] SAWFLY [0] APHID *(Bydv.)* [0] GREEN BUG [0] CEREAL LEAF BEETLE

[ ] OTHER *(Specify)* _____

HESSIAN FLY RACES: [3] GP [0] A [0] B [0] C [0] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Redland	Seed size	Centurk 78
Leaf size	Redland	Seed shape	Arapahoe
Leaf color	Cody	Coleoptile elongation	Arapahoe
Leaf carriage	Redland	Seedling pigmentation	Siouxland

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form.

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

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Table 1.

	Test Weight (lb/bu)		
	1989 (11)*	1990 (12)	Average (23)
Rawhide	57.5	58.3	57.9
Redland	55.8	56.3	56.1

* (Number of locations)

Table 2.

	Protein (%)		
	1989 (11)	1990 (12)	Average (23)
Rawhide	13.7	12.2	12.9
Redland	12.9	11.4	12.1

* (Number of locations)

Table 3. Nebraska Interstate Nursery.

	Yield (bu/a)					
	1986 (5)*	1987 (5)	1988 (4)	1989 (4)	1990 (5)	Average (23)
Arapahoe	54.3	58.3	51.1	42.0	53.9	51.9
Colt	44.8	55.7	44.0	37.4	49.1	46.2
Cody	55.4	53.8	49.7	39.3	50.2	49.7
Redland	47.7	56.8	48.7	40.4	51.5	49.0
Siouxland	52.2	55.0	54.5	42.4	51.0	51.0
Rawhide	46.8	57.9	55.6	42.4	51.6	50.9

* (Number of locations)

Table 4. Comparison of Rawhide and Redland for spike and coleoptile characteristics.

	Rawhide	Redland
Beak length (mm)	7.63±0.32	1.49±0.07
Glume length (mm)	7.90±0.07	7.10±0.06
Glume width (mm)	3.44±0.05	3.30±0.04
Spike length (cm)	6.98±0.08	7.96±0.14
Spike width (mm)	11.12±0.20	9.72±0.14
Spike density (cm)	3.67±0.05	3.81±0.06
Coleoptile length (mm)	40.54±1.07	37.18±0.34

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RAWHIDE

HARD RED WINTER WHEAT

MILLING AND BAKING PROPERTIES

VARIETY (YEARS TESTED)	WHT PRO %	FLR PRO %	FLR ASH %	MILL YLD %	MIXOGRAPH TIME min	MIXOGRAPH TOL	BAKING ABS %	BAKING MIX min	BAKING VOL cc	BAKING EXT	BAKING GRN	BAKING TEX
RAWHIDE (1983-89)	12.3	11.3	0.41	72.4	5.6	4+	61.4	5.9	861	G-	G+	G+
ARAPAHOE (1983-89)	12.5	11.3	0.45	72.1	4.9	4	61.3	5.2	883	G	G+	G+
SCOUT 66 (1983-89)	12.2	11.1	0.39	73.5	3.2	3+	61.9	3.2	876	G	G	G
CENTURK 78 (1983-85, 87,88)	11.8	10.6	0.41	71.0	5.5	5-	61.2	5.9	858	G-	VG	VG-

The data represent composite averages for the years as indicated and were reported by the Wheat Quality Laboratory, University of Nebraska,Lincoln. Rawhide was similar to Arapahoe and Scout 66 in wheat and flour protein content and higher than Centurk 78. The milling extraction for Rawhide was similar to Arapahoe, less than Scout 66, and greater than Centurk 78. The flour ash level was acceptable. The dough rheological properties of Rawhide, as determined with the mixograph, indicated strong mixing properties that are presently desired by the milling and baking industry. The baking absorption of the experimental variety was similar to the named varieties. The mixing time is longer than Arapahoe and Scout 66 and similar to Centurk 78. The loaf volume was less than Arapahoe and Scout 66 and similar to Centurk 78. External and internal characteristics of the baked bread were acceptable.

CONCLUSIONS

Wheat Protein Content	Average
Milling Properties	Average
Mixing Properties	Strong
Baking Characteristics	Acceptable

Prepared: January 1991
David R. Shelton

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United States Department of Agriculture

Agricultural Marketing Service

Commodities Scientific Support Division

Plant Variety Protection Office
NAL Building, Rm. 500
10301 Baltimore Blvd.
Beltsville, MD 20705-2351

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application No. 9100200
Variety and Kind: "Rawhide" Hard red winter wheat

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on the Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is waived, except that this waiver shall not apply to breeders seed, foundation seed, labeling requirements, and blending limitations.

It has been agreed that the Certificate should be issued in the name(s) of:

Board of Regents, University of Nebraska and USDA/ARS

June 28, 1991
(Date)

Darrell W Nelson
(Signature)
Director, Nebraska Agricultural Experiment Station